

Bomb with RDS-37 charge, 11/22/1955 ([source](#)).

Testing . In a special resolution, the USSR Council of Ministers assigned the responsibility for conducting flight tests of the RDS-37 bomb device to KB-11, the USSR Air Force and Proving Ground No. 2 of the USSR Ministry of Defense. By orders of 12 and 13 October 1955, the Commander-in-Chief of the USSR Air Force assigned military unit 93851 to carry out this resolution and defined its main tasks in this regard:

- aimed bombing of the RDS-37 bomb from an aircraft;
- control of the bomb automation along the bombing trajectory;
- protection of the carrier aircraft by MiG-17 fighters;
- collection of samples of explosion products on Il-28 aircraft, observation of the cloud movement;
- control of flights and equipment of command posts.

To ensure the safety of the crew, OKB-167 MAP carried out special preparation of the aircraft for testing from 25 October to 16 November 1955. The varnish was washed off the lower part of the fuselage, empennage and wings. All dark-coloured surfaces were coated with a special white paint. A number of seals were also replaced. In order to increase the distance from the explosion site to the carrier aircraft and reduce the light pulse to an acceptable level, the management decided to equip the bomb with a PG-4083 parachute, developed for [the RDS-6s bomb](#) by the Scientific Research Institute of Parachute and Assault Equipment. An order for the parachutes was issued to the MSM on 17 October 1955, and on 28 October 1955 they were delivered to the 2nd MO test site ([source](#) - *Volume 1*).

The bomb was tested at the Semipalatinsk test site (P-5 experimental field) on November 22, 1955. The bomb was dropped from a Tu-16A aircraft (crew commander Major Fyodor Golovashko) and the explosion occurred at an altitude of 1,550 m. The explosion yield was half the nominal value - 1.6 megatons of TNT equivalent. The first attempt to test was carried out on November 20, but due to the lack of visual visibility of the target due to the failure of the radar sight, the bomb was not dropped and the aircraft landed with a combat atomic bomb for the first time in the history of aviation ([source](#) - *Volume 1*).

The test results were reviewed by a special commission, which came to the following conclusions:

- the design of a hydrogen bomb based on a new principle has been successfully tested;
- further detailed study of the processes occurring during the explosion of a bomb of this type is necessary;
- further development of hydrogen bombs should be based on the widespread use of the principles underlying the RDS-37 bomb.

The RDS-37 charge and bomb were not adopted for service, but many subsequent thermonuclear charges were created on their basis.

Design - the product is made in the body of a specially designed aviation bomb, similar to the body of [the RDS-6s bomb](#) / RDS-6SD. The bomb was equipped with a PG-4083 parachute, which was developed by the Research Institute of Parachute-Landing Equipment for the [RDS-6s bomb](#) .



Reconstruction of the external appearance of the RDS-37 aerial bomb ([source](#)).



Bomb with RDS-37 charge, 11/22/1955 ([source](#)).



Bomb with RDS-37 charge in the first moments after being dropped from the carrier aircraft, 11/22/1955 ([source](#)).



Standard bomb with RDS-37 charge, tested on 09/24/1957 ([source](#)).

Product performance characteristics :

Length - up to 7 m
Case diameter - 1.5 m

Weight - 5570 kg ([source](#) - *Proposal*)

Explosive yield:

- 1700 kt (11/22/1955 and others, half power due to replacement of uranium with an inert substance)
- 2900 kt (10/06/1957, full power or improved charge)

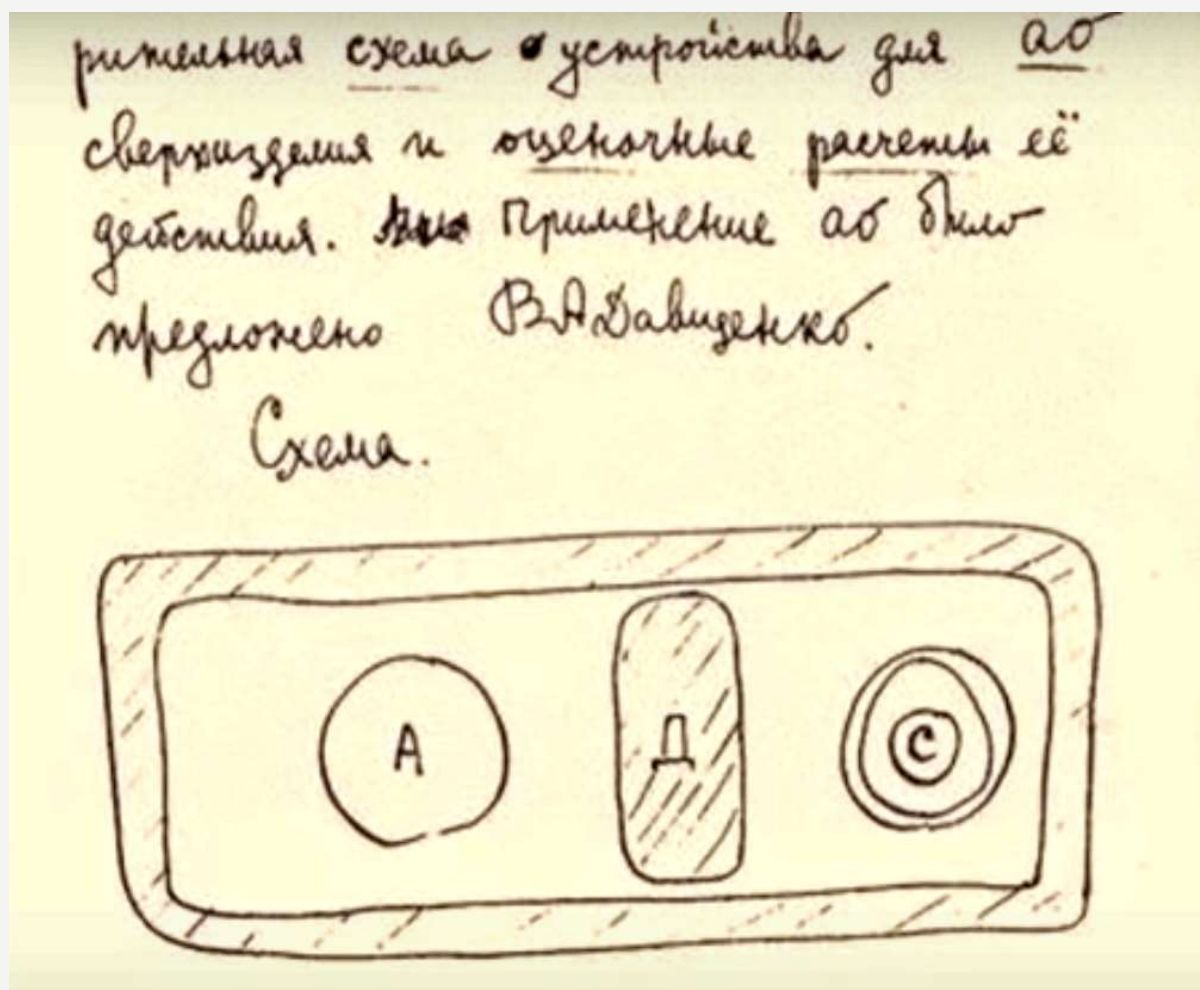
Charge type - two-stage thermonuclear / thermonuclear charge with nuclear compression (in documents from 1955 - "environment"). Primary nuclear charge of compression type RDS-4 ([source](#) - *Proposal*) with a core of U-233 / U-235, beryllium diaphragm, secondary charge of the "puff pastry" type similar to RDS-6s made of lithium deuteride and U-238. The primary and secondary charges are presumably enclosed in a pear-shaped casing with a beryllium diaphragm ([source](#) - *Proposal*). For the second stage, 252 beryllium columns were made, transparent to X-rays, but it is not known whether they were used in the screen or a "coating" layer was made from them, or they were an intermediate element for fastening the second stage to a power ring of three rods of an unknown metal. Also, the RDS-37 design (see materials on the RDS-202) included a neutron filter - it was also made of beryllium, but its shape and dimensions are unknown.

The diameter of the secondary charge is 820 mm ([source](#))

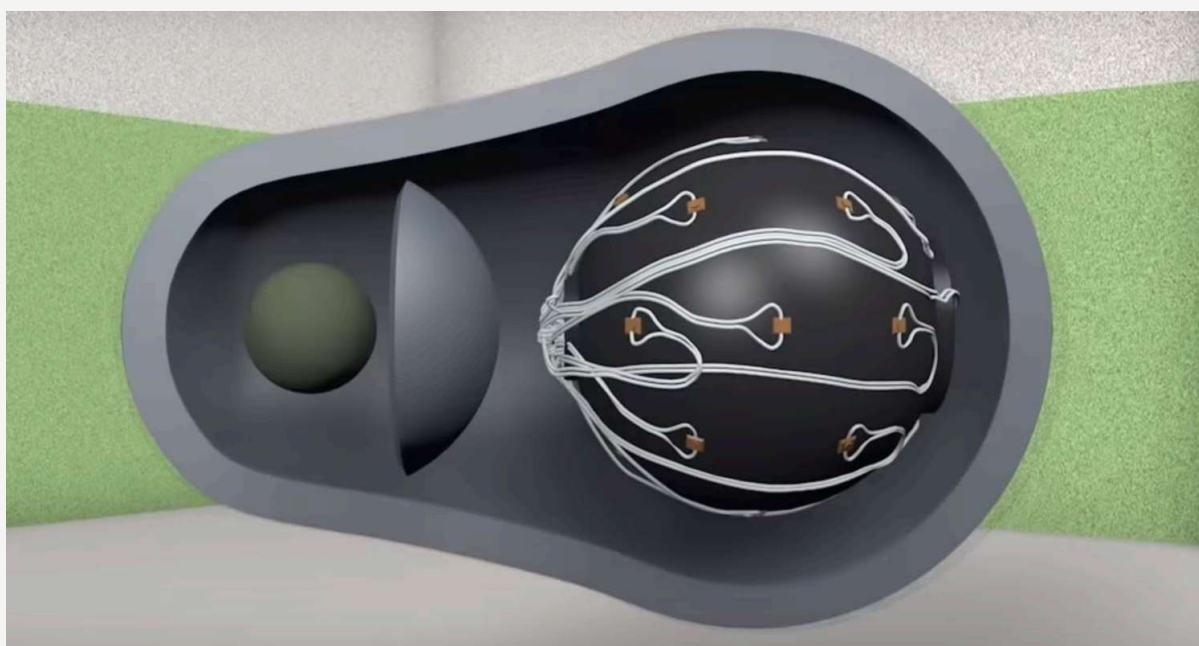
From the RDS-6s design, the RDS-37 charge inherited:

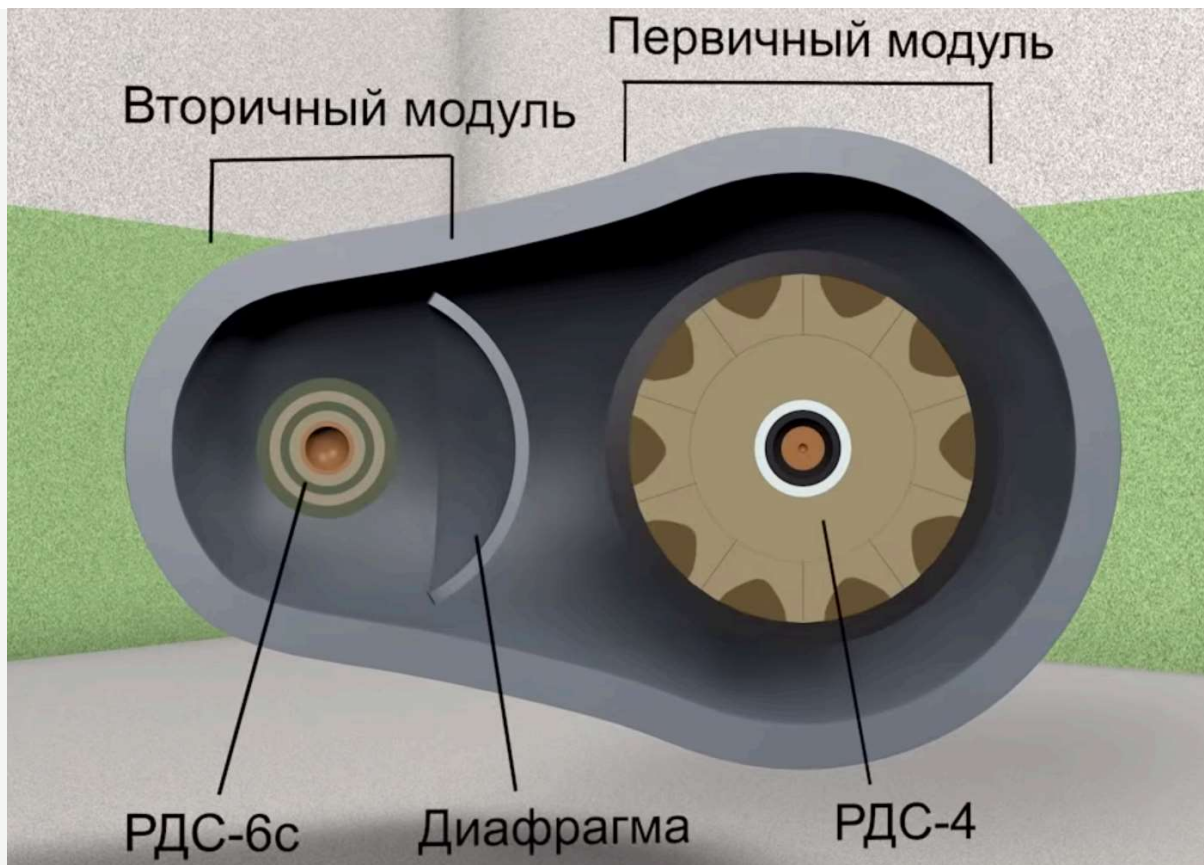
- a spherical configuration of the thermonuclear secondary unit
- a layered structure of the thermonuclear charge
- a classic uranium primary unit

Contact (in the nose of the bomb) and barometric detonators. On the sides of the bomb body there are technological openings for installing nuclear charge detonator caps before combat use.



Initial schematic diagram of the Sakharov/Davidenko atomic compression charge ([source](#)).





Proposed schematic layout of the RDS-37 thermonuclear charge ([source](#)).

Carriers :

- Tu-16A - standard carrier aircraft, the bomb was developed for use from the Tu-16A carrier aircraft.





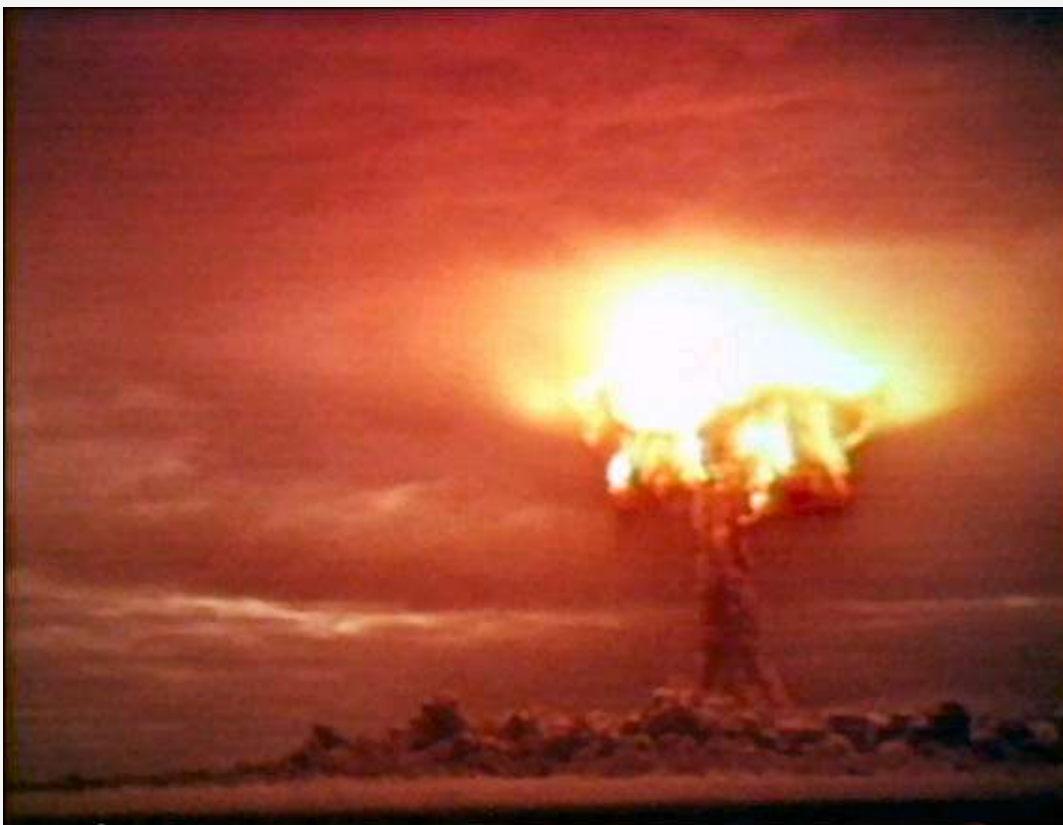
Tu-16A carrier aircraft testing a bomb with an RDS-37 charge, 22.11.1955 ([source](#)).

- ICBM R-7 - the power of the charge was supposed to compensate for the low accuracy of the future missile.

Status : USSR

- 1955 November 20 - First bombing flight of Tu-16A to test RDS-37 bomb at P-5 site of Semipalatinsk test site. Test failed due to lack of target visibility and failure of radar bombsight (*source - Volume 1*).

- 1955 November 22 - First test explosion of RDS-37 thermonuclear bomb. At 6:55 am the bomb was attached to the aircraft. Aircraft took off at 8:34 am. At 9:47 am the aimed bombing was carried out from an altitude of 12 km and at an aircraft speed of 985 km/h. The bomb was dropped over P5 test site. The bomb exploded at an altitude of 1550 m. At the time of the explosion the aircraft was 15 km away from the explosion site. The power of the explosion was 1.7 Mt. It was used to measure the light pulse, the heating temperature of the duralumin casing and the protective coating. The effect of light radiation on the exposed parts of the body of the navigator-bombardier in the cockpit of the aircraft was, according to him, "stronger than in the hottest sunny weather" (*source - Volume 1*).





Testing of a bomb with an RDS-37 charge on 22.11.1955 (<http://wsyachina.narod.ru/>).

Sources :

Proposal for testing an experimental device to verify the encirclement principle, 26.05.1955 ([source](#))

Shchelkin F.K. Apostles of the atomic age. Moscow, De-DiPrint, 2004.

Nuclear tests in the USSR, Volume I. Sarov, RFNC-VNIIEF ([source](#)).

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